



SIKA INTERNATIONAL

TRACER/FUTURE SCOUT PROGRESS REPORT

3 MAY 2000

BY

WILLIAM L. MACHMER

FOR

**35TH ANNUAL GUN AND
AMMUNITION SYMPOSIUM**

WILLIAMSBURG, VA.

SIKA INTERNATIONAL



SIKA INTERNATIONAL

TRACER/FUTURE SCOUT

- US/UK JOINT PROGRAM TO DEVELOP NEXT GENERATION SCOUT VEHICLE
 - REPLACES HMMWV, BRADLEY, CVR(T)
 - EMPHASIS ON SENSORS, STEALTH, SURVIVABILITY
 - DESIGNED FOR 2008 FUE

SIKA INTERNATIONAL



SIKA INTERNATIONAL

CURRENT CONTRACT

- 42 MONTH PRELIMINARY DESIGN/RISK REDUCTION EFFORT
 - TECHNOLOGY EVALUATION/TRADES
 - COST AS AN INDEPENDENT VARIABLE
 - ALL REQUIREMENTS ARE TRADABLE
 - GENERATION 3 PERFORMANCE LEVEL DESIGNS
 - INTEGRATED DEMONSTRATOR
 - NEAR PROTOTYPE LEVEL
 - 8 MONTHS TEST PROGRAM

SIKA INTERNATIONAL



SIKA INTERNATIONAL

KEY REQUIREMENTS IMPACTING GUN SELECTION

- C130 TRANSPORTABLE (SIZE/WEIGHT)
- 3 MAN CREW/48 HR MISSIONS
- SEVERE ARMOR REQUIREMENTS
- VEHICLE UNIT PRODUCTION COST
- TRADES SHOW
 - WEIGHT/ARMOR PREVENT MANNED TURRET APPROACH
 - REMOTE GUN-VIABLE APPROACH
 - WEIGHT/VOLUME/COST KEY

SIKA INTERNATIONAL

LEGO C-130 Transportable Tracked Concept (3-man Crew)

This image presents a LEGO-based concept for a C-130 transportable tracked vehicle, designed for a 3-man crew. The main components and features are as follows:

- Sensor in travel position:** A green sensor unit is shown in its travel position, mounted on the vehicle's hull.
- 5 meter mast:** A green mast is shown in its travel position, mounted on the vehicle's hull.
- Low profile:** A technical drawing shows the vehicle's low profile, with dimensions of 100, 100, and 100.
- Crew:** A green crew compartment is shown, designed for a 3-man crew.
- C-130 deployable with shoring:** A green C-130 transportable tracked vehicle is shown, designed to be deployable with shoring. Dimensions of 252 in and 105 in are indicated.
- Dimensions:** The vehicle's overall dimensions are 252 in (length) and 105 in (width). The sensor unit is 90 in high.



SIKA INTERNATIONAL

GUN IMPLICATIONS

- GUN IS FOR SELF DEFENCE BUT
 - MUST BE ABLE TO DEFEAT ‘EQUIVALENT’ THREAT IN FIRE FIGHT
 - MUST BE SMALL-MINIMAL INTRUSION
 - DESIRE MAXIMUM NUMBER OF STOWED KILLS WITH WEIGHT/VOLUME/COST LIMITATIONS
 - TIMELINES CRITICAL FOR SURVIVABILITY
 - RELIABILITY-REMOTE GUN
 - LOOK “MEAN” FOR OOTW

SIKA INTERNATIONAL



SIKA INTERNATIONAL

Table 1: Cannon Characteristics

		Units	CANNON OPTIONS						
			Bushmaster M 242	Bushmaster II	Bushmaster III	Bushmaster MK44	Bushmaster IV	CTAI CT2000	RMK 30
Physical Dimensions	Calibre	mm	25	30	35	30	40	40	30
	Length		2634	3395	4018	3408	3788	3486	2340
	Width		318	246	431	343	496	390	
	Height		373	407	479	392	440	485	
Cannon Weight		kg	119	152	207	153	263	225	100
Rate of Fire		rpm	SS to 500	SS to 400	SS to 200	SS to 400	SS to 200	SS to 200	SS to 300
Current Status		-	In Service		Under Development				

Table 2: Ammunition Data

	AP Ammunition	GP Ammunition
M242	Oerlikon 25mm APFSDS	No air burst available
Bush II	Oerlikon 30mm APFSDS	Oerlikon 30mm Ahead
Bush III	Mauser 35mm APFSDS Mauser 50mm APFSDS	Oerlikon 35mm Ahead Oerlikon/Mauser 50mm Ahead
Bush II Mk 44	Oerlikon/Mauser 30mm APFSDS, Oerlikon/Mauser 40mm APFSDS	Oerlikon 30mm Ahead Oerlikon/Mauser 40mm Ahead
Bush IV	Bofors 40mm APFSDS	Bofors 40mm 3P
CTAI	CTAI 40mm APFSDS	CTAI 40mm GPR

SIKA INTERNATIONAL



SIKA INTERNATIONAL



SIKA INTERNATIONAL



SIKA INTERNATIONAL

LOGICAL DECISION FOR WINDOWS

- COMMERCIALY AVAILABLE SOFTWARE
- FORCES SELECTION OF MEANINGFUL EVALUATION CRITERIA AND WEIGHTS
- WHAT IF ANALYSIS TO EXAMINE ROBUSTNESS OF DECISION RATIONALE

SIKA INTERNATIONAL



SIKA INTERNATIONAL

GENERATION OF WEIGHTING FACTORS

- IPT ENVIRONMENT
 - JPO TFI'S, SME'S AND CONSORTIA
- ESTABLISH CRITERIA
- ESTABLISH WEIGHTING OF CRITERIA
- ESTABLISH QUANTIZATION OF PERFORMANCE
- TRICK-HOW TO REACH AGREEMENT

SIKA INTERNATIONAL



SIKA INTERNATIONAL

WEIGHTING FACTORS

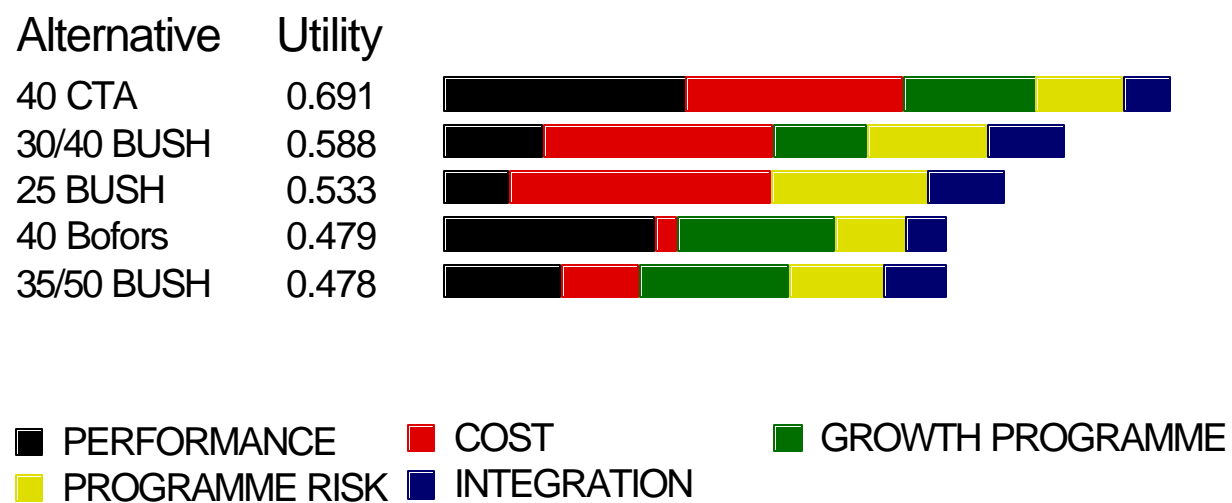
- LETHALITY(1.0)
 - PERFORMANCE(.3)
 - RELIABILITY(.105)
 - ROUNDS/KILL(.075)
 - KILL TIME(.075)
 - EMERGENCY OPS(.015)
 - CREW MAINT.(.015)
 - RESELECT TIME(.015)
 - INTEGRATION(.1)
 - WEIGHT(.035)
 - SURVIVABILITY(.035)
 - CASE EJECT(.01)
 - POWER(.02)
 - COST(.3)
 - GROWTH(.15)
 - RISK(.15)

SIKA INTERNATIONAL



SIKA INTERNATIONAL

Figure 1: Stack-bar Ranking – Goals Ranking

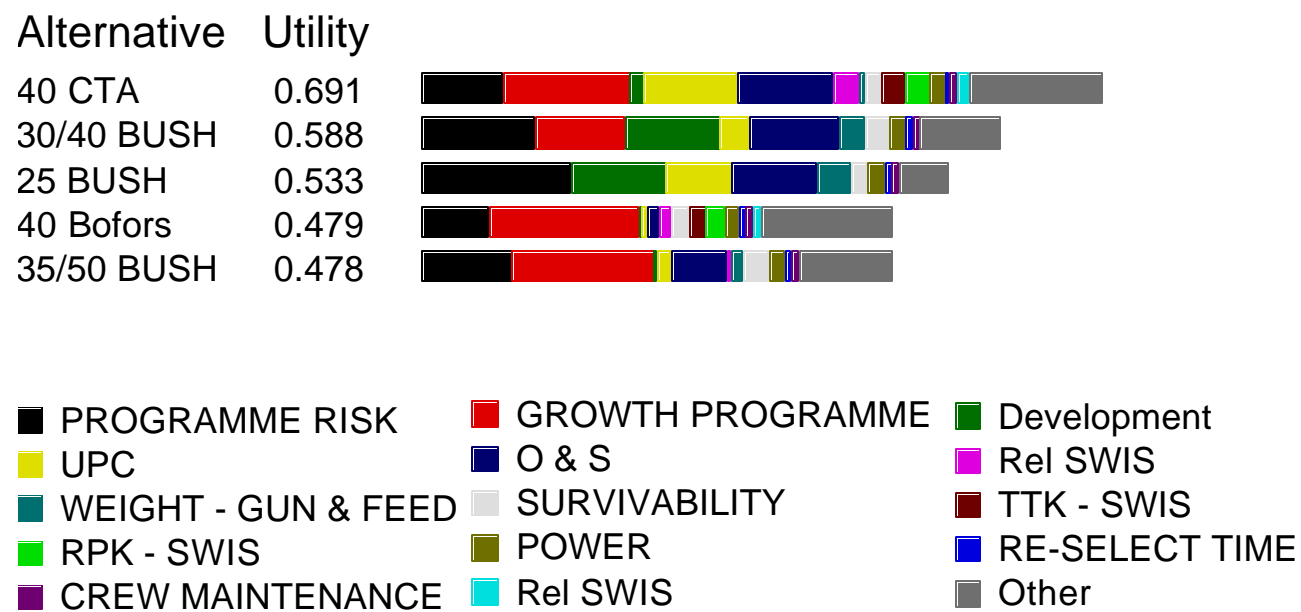


SIKA INTERNATIONAL



SIKA INTERNATIONAL

Figure 1: Stack-bar Ranking

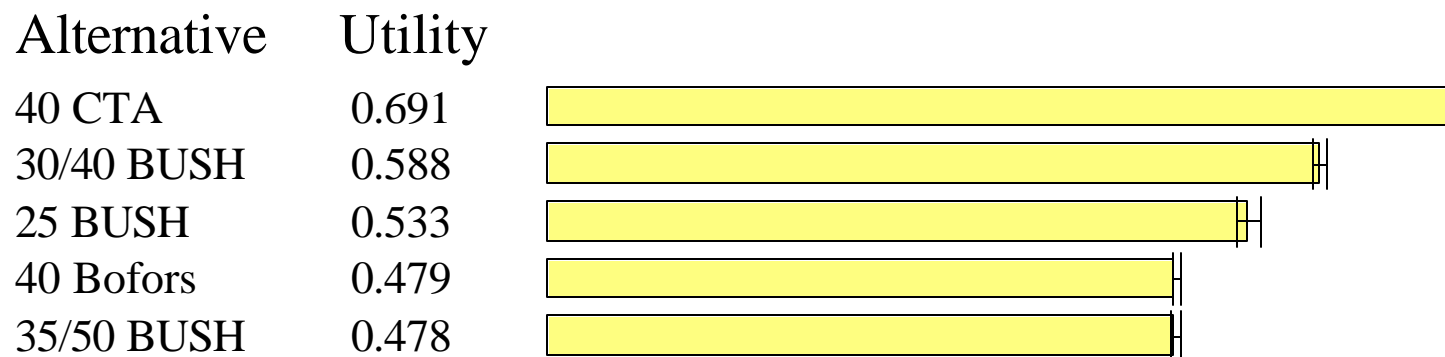


SIKA INTERNATIONAL



SIKA INTERNATIONAL

Figure 1: Ranking for Lethality (Performance against two target levels shown)



SIKA INTERNATIONAL



SIKA INTERNATIONAL

CONCLUSIONS TO DATE

- TRADES TO DATE
 - LETHALITY
 - INTERNAL VOLUME
 - WEIGHT/STOWED KILL
 - INTERNAL VOLUME/STOWED KILL
 - OVERALL COST
- ALL TRADES FAVOR 40 MM CTAI
- TRADES DOCUMENTED WITH LOGICAL DECISION FOR WINDOWS
 - EASY RE-EVALUATION FOR CHANGED DATA/CRITERIA
- CTAI 40 MM GUN WILL BE INTEGRATED ONTO DEMONSTRATION VEHICLE FOR TESTING IN 2001

SIKA INTERNATIONAL